approach

APRIL 1978 THE NAVAL AVIATION SAFETY REVIEW

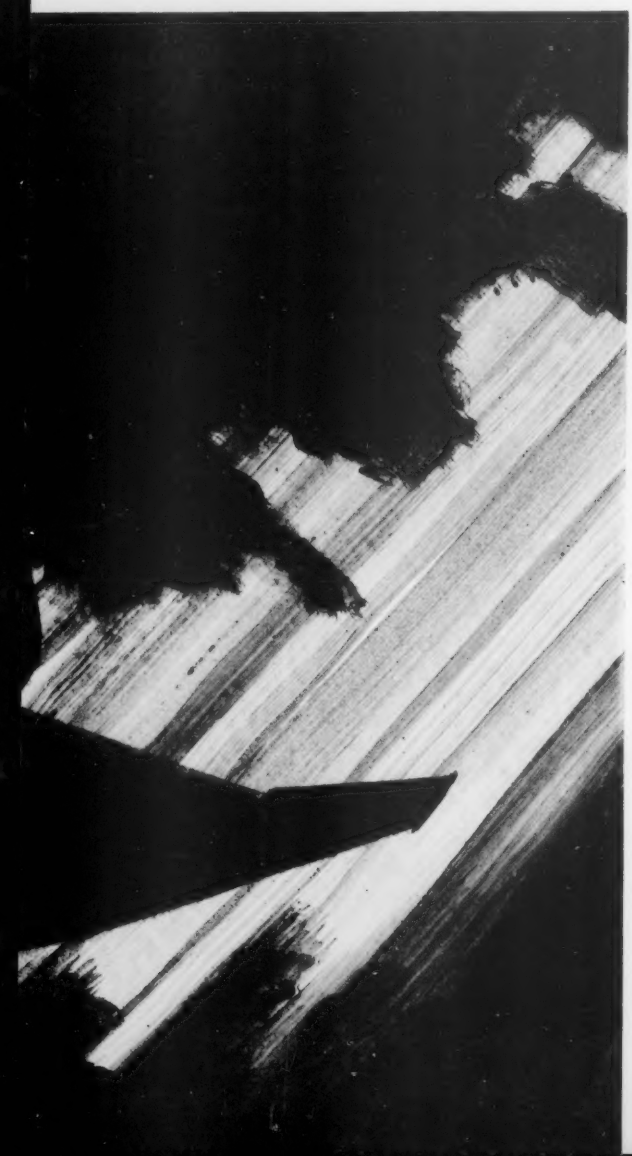
Our squadron was "over the hump" in our WESTPAC deployment. Counting workups, we had been operating extensively off the ship for the last 10 months, with only brief interludes in port. Most of the squadron aircrews had achieved Centurion status. Over 90 percent of the cruise flying was over.

In short, we had reached the point, as most squadrons eventually do, that was ripe for the "old pro" complacency attitude to become a problem. The squadron was fighting this attitude, both formally and informally. But the real demonstration that we were not home free came one dark night off the coast of Korea. Never had this crew come closer to ejecting or been more challenged in an aviation environment. By any standards, what happened that night was . . .

Not just another sea

story

By LT C. M. Drake
and
LT G. W. Brown
VF-194



THE flight was scheduled as a normal intercept training sortie. The aircrews watched the air wing intelligence brief over the readyroom TV, making note of the primary divert field: Kunsan, South Korea. After the common portion of the brief, the flight leader went into the specific flight and mission details. He ended his portion of the brief by pointing out the existence of Kwang-Ju, an F-4 suitable field in line with Kunsan, but closer. All flight members studied both fields from their IFR Supplements and approach plates.

The launch was normal. Aircraft 213 tanked off the cat, and 210 was informed that he would be mission tanked. The flight ran a few intercepts until 210's tanker was available, at which time 213 went into an orbit. While in this orbit, 213 lost its starboard generator with the bus tie closing. Efforts made to reset the generator were unsuccessful. Little did either crewmember know that this relatively minor malfunction was just the beginning of what would turn out to be a real nightmare!

Although the pilot's telelight panel indicated a good bus tie, the RIO began to have indications of bus tie difficulties. The TAKE-COMMAND lights on the UHF/NAV panel began to blink intermittently in conjunction with the UTILITY light. A squadron representative on the ship was called to CATCC and apprised of the circumstances. The pilot of 213 was informed that the recovery had been completed and he was to remain airborne until the next scheduled recovery time.

As 213 joined with 210, other problems began appearing. The RIO's UHF/ICS transmitter began to degenerate to the point that about 30 percent of his transmissions were not going out, although he still had a side tone on all transmission attempts. This problem was not resolved by reseating the upper block, which was a repeat gripe on 213. Next, the TACAN lost DME and started to wander in azimuth. Because of 213's deteriorating situation, 210 was asked to lead a section approach when the recovery commenced.

After about an hour of flying loose formation in the horizonless night, the pilot of 213 deployed the RAT, and the section approach commenced. The account of the events that followed is narrated by the pilot and RIO of 213.

Pilot: CATCC held the gear until 8 miles. As the gear was lowered at 1200 feet, the port generator went off the line. The RAT picked up the load after about a second's delay. I became extremely disoriented; it was pitch black, with no visible horizon, and the stab augs had kicked off just as the gear configuration changed.

RIO: In fact, we lost about 200 feet. The pilot informed me that he had a bad case of vertigo. Two Ten gave a call to "Keep her flying" and informed us that the nose gear was trailing, which concurred with our unsafe indication.

Pilot: I had my hands full flying the aircraft. I finally got comfortable enough to think to cycle the port generator, which reset. The nose then indicated safe, which was confirmed by 210. We decided to commence another approach immediately while the port generator was still functioning.

RIO: The lead realized that my pilot was extremely taxed, and called for wide, easy turns from CATCC. We received excellent control – except the controller was also

Following the bolter, 213 picked up his lead in the 9 o'clock position and commenced a joinup. With the flight rendezvoused, the section circled back for another approach. At this point, fuel was becoming a factor, 213's UHF/ICS difficulties were getting worse, and the troubled Phantom was experiencing a multitude of minor erroneous electrical indications.

controlling another aircraft on the same frequency, leading to some confusion.

As we approached about 2 miles from the ship, I noticed two lights forward of the ship on the right side of the canopy. These lights split about 30 degrees of arc and were in line with where the horizon should have been. I didn't realize at the time how valuable these lights would prove to be.

Pilot: I took over the lead after getting good needles and visual contact with the ship. The LSO called for a gear check, which we answered. This approach ended with the aircraft being high/flat at the ramp and boltering. As the gear hit the deck, the port generator kicked off the line. The RAT again took some time to pick up the load, meaning we left the angle with a completely black cockpit! The stab augs were off, the flaps were coming up, and my attitude gyros were tumbling when the lights came back on. I felt the aircraft rolling right. I reacted by putting in left stick but felt no response. At 75 feet, I thought we had reached 60 degrees right wing down, and called for the RIO to initiate dual ejection.

RIO: When the aircraft left the deck, I knew that the pilot would have to be on his instruments. I checked for the two lights to the right and estimated that we were about 10-20 degrees right wing down. I went back to the instruments, saw a good angle-of-attack, and read 50 feet on the altimeter, going up. I then transitioned back outside the cockpit.

I then heard the pilot calling, "Eject! Eject! Eject!" At the first eject call, I started yelling, "No! No! Don't!" I made this call after rapid consideration of the following factors: the pilot was disoriented and experiencing vertigo; the level of engine noise reassured me we had adequate thrust; and even though my gyros were tumbling, my outside light reference convinced me we were basically wings level and our aircraft was recoverable.

I did have some bad thoughts running through my mind, though. I was not sure that the pilot was receiving my ICS transmissions. As an aircrew, we had discussed low-altitude ejection situations in quite some detail. Our basic assumption had been that he would probably make the eject call due to his superior instrumentation and forward visibility, but that I would be the one to physically pull the handle as he strove to maintain a level attitude. On the third eject call, the plan was for the pilot to pull the handle.

Pilot: As I called for ejection, the RIO said, "No! No! Don't!" I shut up and let him talk me back to wings level. The aircraft remained in a good rate of climb, but I still had vertigo and was leary of trusting my gyros when they came back on the line. As soon as I thought we were safely airborne (at about 3000 feet!), I again cycled the port generator, which came back on.

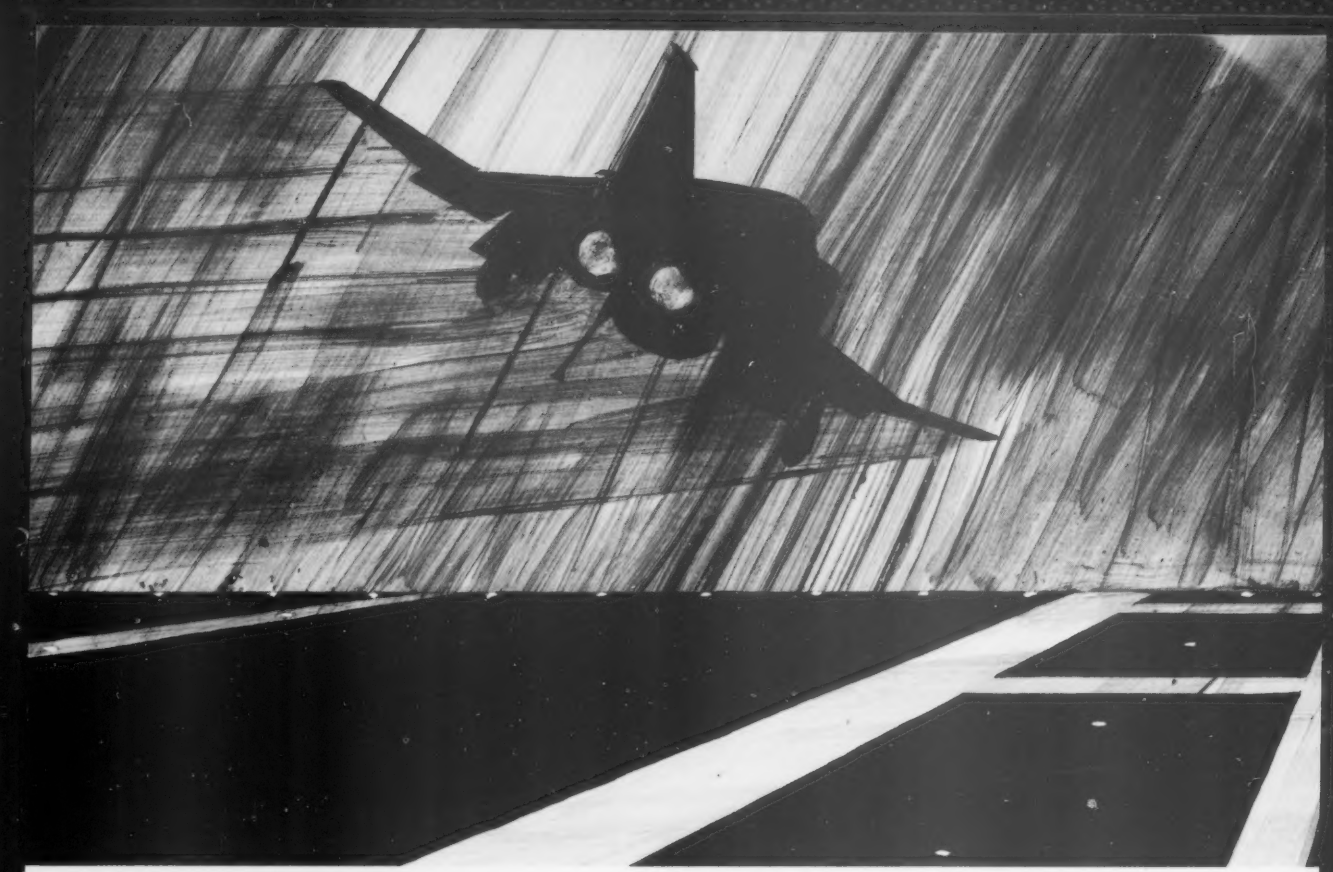
Following the bolter, 213 picked up his lead in the 9 o'clock position and commenced a join-up. With the flight rendezvoused, the section circled back for another approach. At this point, fuel was becoming a factor, 213's UHF/ICS difficulties were getting worse, and the troubled *Phantom* was experiencing a multitude of minor erroneous electrical indications.

Considering the circumstances, the next approach was uneventful. The LSO asked for confirmation of gear down and locked. Both 210 and 213 replied vociferously in the affirmative. The LSO then asked for a fast or slow indication on the approach light, which 213 attempted to give. Although on a rails pass, 213 was waved off because the LSO was not assured that the gear was down and locked.

The squadron CO, in conjunction with Air Operations, decided at this point to have 213 clean up and tank. The assigned tanker was A-6E 503, carrying a buddy store. The pilot of 503 told tanker control to remind 213 that he was blinking red vice green, but this word was not passed. This led to a delay in the rendezvous due to the presence of several aircraft in 503's vicinity, one being a dry KA-6D.

When 503 was finally sighted by 213, he streamed his package – but no lights illuminated. The *Phantom* attempted to plug anyway, but received nothing. After 213 backed out, the basket was cycled and the amber light illuminated. With the probe engaged, however, the green light blinked on, then off. By jockeying with the basket, 213 was able to find about a foot and a half of play where fuel transfer could take place if the hose was pushed to the 3 o'clock position in relation to the store. Two Thirteen spent 13 arduous minutes plugged in, burning 100 pounds of fuel for every 200 received.

During the tanking evolution, squadron playmate 206 was launched and vectored toward 213. Before they had a chance to commence an approach, however, the ship



decided enough was enough. Rather than risk another blacked-out bolter, 213 and the other 200 series aircraft were all bingoed. An initial vector of 155 at 74 was given.

Each aircraft questioned the vector, as it didn't jibe with their DR plot. Nevertheless, they received two confirmations. The aircrews knew this was wrong, however, and made a right-hand turn to 360 degrees while climbing to the bingo altitude of 40,000 feet.

Two Zero Six attempted contact with several GCI sites in the route of flight. After many attempts, one was contacted. In keeping with the way things were going that night, this GCI informed the flight that Kunsan was closed at night for runway repairs! Fortunately, the flight had briefed the alternate airport. Two Thirteen asked to proceed direct to Kwang-Ju and requested vectors.

The rest of the flight was as normal as any night bingo evolution can be – until touchdown at the divert field. At that point, 213 again lost the port generator. Fortunately, there was a long, lighted airstrip ahead of it, and the *Phantom* was able to roll out safely.

With no maintenance capabilities at Kwang-Ju, the decision was made the next day to fly back to the carrier under VMC conditions. But the Gremlins of the previous night were still alive and well and determined to tax the fighter pilots to their fullest. Shortly after takeoff, the RIO lost all his oxygen flow and was forced to fly back to the ship with his mask off. Maybe it was a good thing because as the gear was lowered back at the ship, the RIO detected electrical smoke in the cockpit. As 213 trapped, the generator dropped off the line. The aircrew performed an emergency ground egress after some delay due to the RIO's total loss of ICS on touchdown.

This flight provided many lessons learned/reinforced:

- A thorough brief is an important feature of even the most routine flight. When operating from a carrier, the position of all feasible divert fields should be known (whether operating under bingo conditions or under blue water operations scenarios).
- Check NOTAMs as thoroughly as possible for all flights. Not knowing such info can be more than just embarrassing.
- To get vertigo is no disgrace, but not to admit it can be fatal. Inform the other aircrewmember (or the controlling agency, if single-seated) ASAP to allow for as much coordination as possible.
- When an aircraft is experiencing an emergency,

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excessive UHF transmissions can add greatly to the problem. Evaluate your transmission before making it. If it is not applicable, don't add to the confusion.

- When a CATCC controller is handling aircraft *in extremis*, efforts should be made to remove other aircraft from his control. The controller will be able to keep abreast of the situation and be far more helpful if this is done.

- The vector of 115 at 74 vice the actual vector of 358 at 174 was the result of the controller asking for an update, his board writer erasing the old information, a delay in obtaining the new data, and the controller trying to remember the info while in a stressful situation – a perfect example of too many people trying too hard to help.

- This error vividly demonstrates that it is imperative to be constantly aware of your position. While under stress, it is extremely difficult to reconstruct a DR plot in your mind if you have let your geographical orientation go for long.

- When reading the discrepancy book prior to flight, pay attention to all repeat gripes, such as the UHF/ICS problem. A repeat gripe which is signed off several times with the same writeoff should be closely scrutinized. Such a problem can have a profound effect on the outcome of an emergency situation.

- If you are the wingman of a sick aircraft, your aid can be immeasurable. Don't overextend yourself, however, in your effort to help your buddy. You may have a perfect boarding rate and need only one approach, but the carrier doesn't have a perfect acceptance rate. A foul deck waveoff with 200 pounds remaining is just as bad as a bolter with that amount.

- There is always the chance that the most humdrum routine sortie may turn out to be a nightmare. Many times aircrewmembers can be heard discussing how they don't feel well enough to fly ACM, "but this is just an AIC hop." If you are not physically prepared to fly under demanding circumstances, you are not prepared to fly.

- Crew coordination is not a myth. Both members should constantly take active parts in all situations, whether they be "pilot phases," such as landing, or "RIO phases," such as radar search.

Crew coordination does not magically happen. The crew in this incident had been flying together off the carrier for more than 3 months. They had attempted to objectively debrief each other after each hop. Based on this experience, the RIO felt the pilot could handle the situation and would be willing to ignore his erroneous instruments and fly the aircraft on the RIO's commands. This was the most important factor in the RIO's decision not to eject.

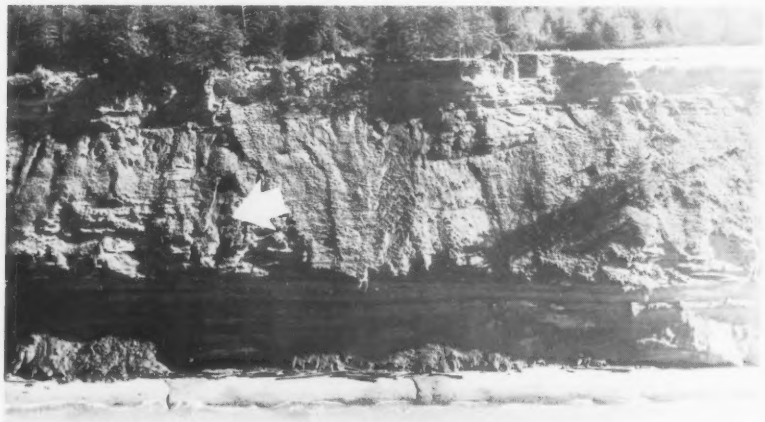
When this incident was related to the squadron at a training session, there were a lot of questions and much discussion. There were quite a few squadron members who felt that a pilot's call for ejection in such a night bolter situation should be mandatory. However, this article is not an attempt to dictate policy or suggest procedures. It is an attempt to stir up thoughts and foster discussion between aircrewmembers. This pilot and RIO felt very strongly that crew coordination salvaged this nightmare flight.

Sea stories are great for happy hours and entertaining nuggets. They are also great for learning valuable aviation lessons. This sea story provided one F-4 crew with a good sea story – and a lot of invaluable experience. ◄

Besides being an interesting story, this incident brings up some significant decisionmaking options that warrant further discussion. Was it better to undertake a demanding inflight refueling evolution than to keep the pilot in the pattern? Should the pilot have bingoed after the first blacked-out bolter? Was it prudent of the LSO to wave off the troubled F-4 even though the pilot confirmed the gear was down? Would it have been safer to fix the aircraft at the divert field rather than fly it back to the ship? Nothing succeeds like success, but would you have made the same decisions? – Ed.

BRAVO ZULU

It was a shear drop of 300 feet to the ocean.



Arrow indicates location of boy on dead tree.

LT Ronnie E. Edmonson
LT Andrew J. Peck
AMH1 Robert E. Moore
AE2 Reustle O. Lindner
HM3 Earl Schofield

THE Island County, Washington, Sheriff's Department requested NAS Whidbey Island's helicopter assistance *one night* to aid in a cliffside rescue on West Beach, near Oak Harbor. Search and Rescue was alerted and the SAR helicopter launched.

The SAR crew proceeded to the rescue site, established communications with the Sheriff's Department, and quickly received an overview of the situation. A 15-year-old lad had slipped over the edge of a 300-foot cliff. He slid and fell about 150-175 feet where he grabbed and hung onto a small, protruding tree.

Representatives of the Sheriff's Department lighted the area with floodlights while the SAR crew made an approach to a hover over the victim. The HAC, LT Edmonson, stabilized into a hover, parallel to and even with the top of the cliff.

The crewman, AE2 Lindner, attached himself to the hoist cable and was lowered by AMH1 Moore. The rescue crewman approached the victim with the horse collar spread open. After he reached the teenager, the victim grabbed the horse collar with one hand and desperately hung on. Just as this occurred, the tree gave way and fell from sight. AE2 Lindner helped the victim get his other hand in the horse collar and wrapped his legs around the teenager, and both were hoisted quickly into the helo.

The pilot flew to the Naval Hospital Whidbey Island where the victim was admitted, treated, and later released – very little worse for wear. By their skill and expertise, this SAR crew saved a human life.

Well done! ◄

Left to right: AE2 Reustle O. Lindner, HM3 Earl Schofield, LT Ronnie E. Edmonson, AMH1 Robert E. Moore, and LT Andrew J. Peck.

*Murphy

274, Whiting tower, you are cleared for takeoff.

LTJG Frederick Marlette, the IP (instructor pilot), and his student, LT Karimsefat, Iranian Navy, took off on a scheduled familiarization flight in their T-28. They climbed to altitude and the student practiced various maneuvers. LTJG Marlette then took control to demonstrate a simulated high-altitude engine failure.

The IP retracted the gear which had been lowered by the student on a previous maneuver, and noticed a normal UP indication. The IP continued the demo, clicked off the procedural steps, and lined up the T-28 for a runway of one of the outlying fields. At the 90-degree position, he was unable to lower the gear. The simulated emergency was terminated and the real emergency began.

LTJG Marlette executed a waveoff and climbed to 3500 feet. For the next hour and a half he tried everything in the book, plus a few other acts, to lower the gear handle. It not only was in the UP position, but also seemed to be bolted there.

Meanwhile, back in the squadron readyroom, the usual chatter of questions and answers between students and instructors ceased when word was passed about the airborne emergency. Instructors were shoulder-to-shoulder, two-deep, listening to developments of the unwanted drama. Suggestions flowed like water, ranging from inverted flight and spins to negative and positive G. Maintenance personnel huddled with their manuals and added to the flow of ideas. Practical ideas were relayed to LTJG

strikes again!

By LT Bob Hollerbach
VT-6 Safety Officer
and
LTJG T. J. Mearsheimer
VT-6

Marlette, and he tried them unsuccessfully. The field was readied for the inevitable wheels-up landing after brute force broke off both gear handles.

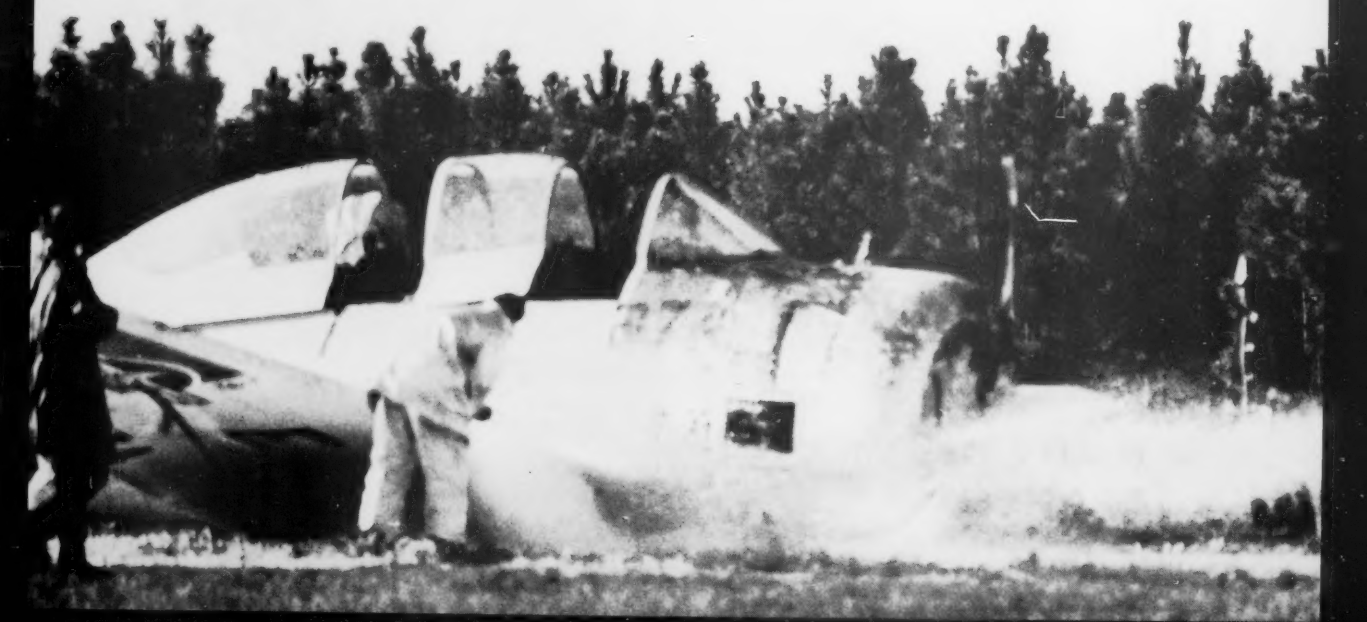
NATOPS and safety officers hurried to the runway's edge and reviewed procedures with the pilot after establishing radio contact. Onlookers jockied for position to have an uninterrupted view from the line area.

The IP and student discussed what actions each would take on the approach and landing. They performed the landing checklist, and the IP set up a full-flap approach. The photos show the T-28 at various stages in the pattern and the picture-perfect landing. They slid about 250 feet before all motion ceased, the pilot secured the aircraft, and both climbed out uninjured.

The ensuing investigation revealed that a classic *Murphy had occurred. The bolt securing the actuating rod to the clevis in the nose wheelwell had been installed backwards (head aft vice head forward), causing the gear handle linkage to jam in the UP position.

It was recommended – long ago – by the greatest minds in aviation maintenance to get rid of Murphies forever by making a one-time inspection of all T-28s to ensure that all bolts were installed correctly. As a further precaution, a written warning was placed in NAVAIR 01-60FGB-2, telling the world that if the bolt is installed backwards, the landing gear will not come down!

*Murphy's Law says: If an aircraft part can be installed incorrectly, someone will install it that way.



a dangerous oversight

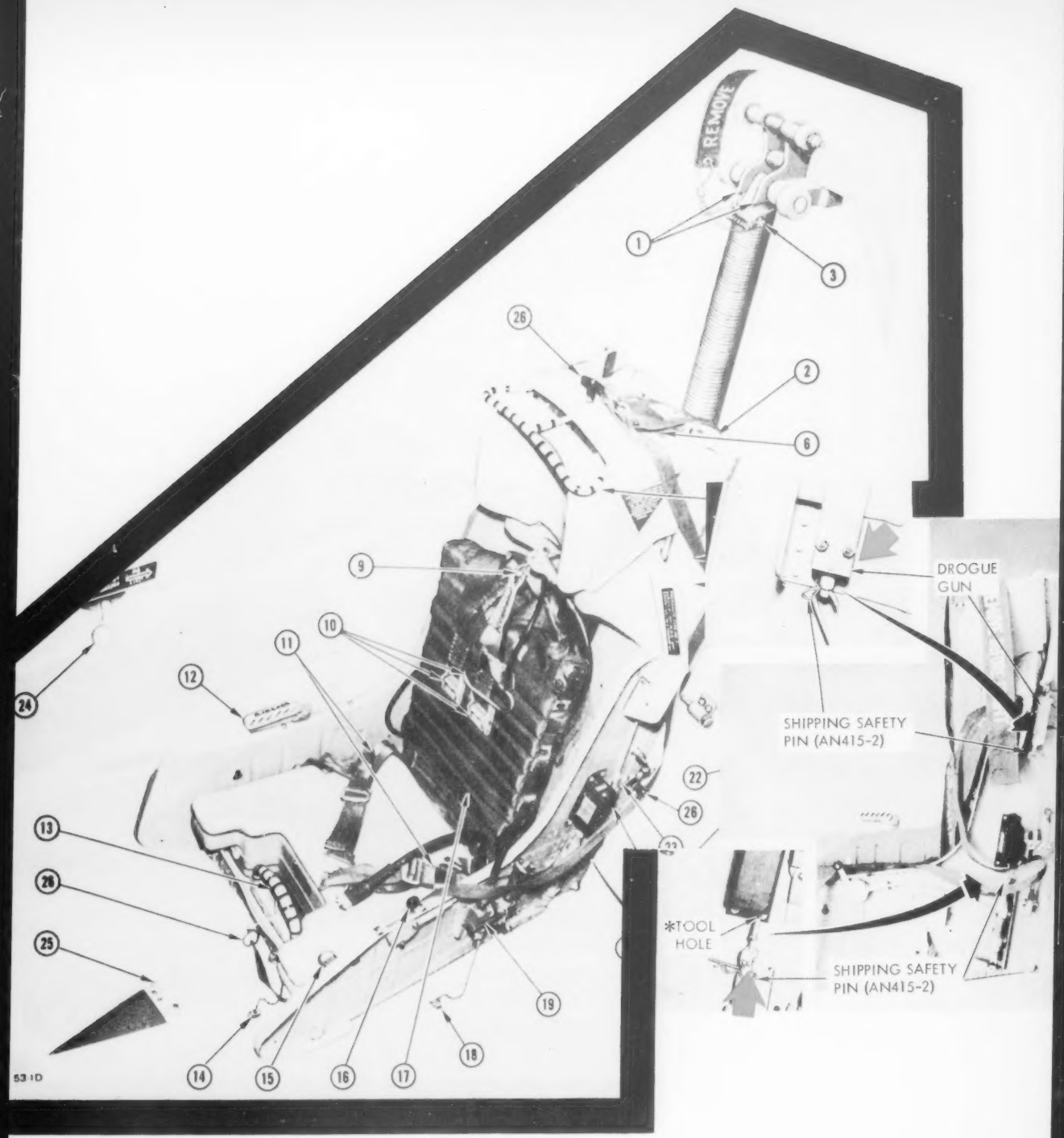
Anonymous

AN instructor at NAS Training Command manned his T-2 earlier than usual for his scheduled FCLP evolution. It was well he did, for his bird went down during start. If he hustled, the instructor felt he could grab the spare and still make his overhead time. This he subsequently accomplished. Upon completion of his period, he turned the aircraft over to a student, also bound for the bounce pattern. The student's FCLPs were completed without incident, but in the course of postflight pinning of his ejection seat, the student noted two small pins inserted in the area of the drogue gun. Maintenance was notified, and it was confirmed that the pins in question were in fact maintenance pins, used to safe the drogue gun and harness release actuator.

Investigation revealed that the aircraft had just completed a 210-day inspection during which time the seats had been removed and reworked. Actual rework and reinstallation were accomplished by the collateral duty inspector/quality assurance representative from the AME shop, so the powerplants quality assurance representative was drafted by maintenance control to check the seat. The powerplants QAR reluctantly agreed to perform the check, since that was the aircraft's only remaining downing discrepancy. But he had a collateral duty inspector from the AME shop accompany him, since he felt unqualified to do the quality assurance inspection on an ejection seat.

One might ask how two safety pins could be missed by two QARs, one CDI, one plane captain, one final checker, and two pilots. Haste, certainly, was a factor, but there was some additional "help." The pins are small and did not have individual flags, but were merely connected by a strip of (formerly) fluorescent orange tape that had been spray painted the same shade of gray as the ejection seat!

In addition to the classic breakdown – tempo of ops producing shortcuts – two other noteworthy items came to light during discussion of the incident. First, some personnel felt perhaps they'd been checking more for the *absence* of flags rather than the *presence* of pins. Secondly, when this incident was relayed to the neighboring squadron for info, they allowed as how they'd had a similar incident 2 weeks prior, but forgot to report it! Guess that's why the Anymouse system exists. Anybody else out there got a Delta Sierra that's a little too embarrassing to put on the wire?



Green arrows identify the location of the two maintenance pins.

Training, standardization, and supervision in squadrons must be continuous to promote safety, enhance readiness, and reduce the chances of losses in personnel and aircraft due to . . .

NOT KNOWING YOUR PILOTS

A FLIGHT of two helos departed for a weekend cross-country in weather that can best be described as marginal VFR. Their route of flight was over mountains to an airport in the plains. They made a fuel stop in the foothills, and despite worsening conditions, took off on a section instrument departure (to leave the control zone), intending to continue VFR. In less than 30 minutes after departure, the flight flew into a mountain, and nearly all aboard were killed.

The events which preceded the accident were typical of those which often foretell disaster. Let's review some of the events leading up to the crash as they occurred.

About 2 weeks before the flight, the flight leader began thinking about and planning a section cross-country to a destination more than halfway across country. He picked a close friend to be the other aircraft commander and two other squadron pilots to fly as copilots. Over a period of several days, they met to discuss the flight. A request was submitted, but turned down because of the distance involved for the time available. So they regrouped and resubmitted another request to a base not so far away. It was approved.

They met early on the morning of departure, received a weather briefing, and conducted a short mission brief. The flight leader and the other HAC went to Operations while the other two pilots proceeded to the aircraft to conduct the preflights. The weather, generally, for the first leg of their route was 2000 overcast, 4 miles in rain and fog. They were also told there was an AIRMET in existence, but to check at their first fuel stop for the latest information.

They flew the first leg of a VFR stopover flight plan between 500-1000 feet AGL, except for one excursion down to the deck to simulate gun runs on a freight train.

At their first stop, they failed to receive an update on the weather and did not request details of the AIRMET. The weather was reported as 500 broken, 2000 overcast, 1 mile in rain and fog. Before takeoff, they were advised that the field was IFR. They were offered an IFR departure to maintain 2300 feet to a fix outside the control zone with the expectation they would proceed VFR after reaching the fix. They departed the fuel stop with conditions below minimums for the only approach they were capable of executing.

Five miles outbound from the airport, before reaching the fix, they were given vectors toward their route of flight. Departure questioned whether they were VFR, and the pilots replied they were. They were cleared on course.

Sequence reports indicated that weather en route was 500 to 1000 broken, 1 to 3 miles in rain and fog. The flight was observed on radar to descend from 2300 to 1100 feet MSL, placing the flight 300 feet AGL.

One witness in an automobile about 18 miles from the eventual crash site saw the flight pass overhead at a very low altitude. The terrain continued to rise along the route.

At one point, the wingman lost sight of the lead and began a shallow climbing turn to maintain separation. After 30 degrees of turn, the wingman regained sight of the lead. He continued on course and joined up when he was beckoned ahead with a call from the flight lead that it was clear. They were now flying at treetop level.

Two witnesses, one and a half miles from the crash site, saw the two aircraft at an estimated height of 10-20 feet above the trees. One witness said to the other, "They had better climb or they'll fly into the mountain." Seconds later, the two aircraft crashed within several hundred feet of each other – *2100 feet below the top of the cliff!* Weather at the crash site, as reported by rescuers, was 0/0.

Information that was pieced together indicates that the flight was very casually approached from its inception.

One of the surviving pilots had no idea of the terrain heights along their route. When asked what was the highest point along their route, one pilot guessed 4500 feet. At the fuel stop, they received en route weather as 5500 (MSL) overcast, thus, a 1000-foot obstruction clearance. In reality, en route terrain rose to almost 7000 feet.

Apparently, their planning did no more than satisfy the requirements to fill in the information on the cross-country request. They failed to study maps of the route, they didn't conduct a brief of the route, and they didn't discuss IFR possibilities or alternate routes. The flight leader never conducted a NATOPS brief or obtained a proper weather brief for the second leg of the flight.

A look into the background of the flight leader revealed that he enjoyed a reputation among his peers as one who was a perfect combat pilot even though he had never seen combat and had only 800 hours total flight time. Yet, he flagrantly and routinely violated rules and regulations (not

known by the squadron superiors) concerning flathatting and NATOPS restrictions. Some thought he was a hot stick. The other aircraft commander did not enjoy the same reputation, but had had two incidents (known by superiors) involving pilot error. One incident was a wheels-up landing, for which his aircraft commander designation was revoked until he passed a recheck. He was counseled by his skipper and others about any more displays of poor judgment. Yet, a week after being redesignated, he and the flight leader were flathatting small boats on a lake.

Several articles have been published in APPROACH addressing the problem of pilots supposedly enjoying the reputation of above average, one of the best, outstanding, etc., but in reality were strictly the hotdog variety. (See APPROACH, "Unauthorized Airshows," DEC '74; "Psychological Profile," JUL '75.)

There is a certain amount of admiration for one who knows his aircraft well and is proficient in controlling it through a broad range of performance. There is also a fine line between the pilot who flies aggressively but within limits and the pilot who flies aggressively but exceeds these limits. Accept for the fact, however, that *flight violations are indicators of poor pilot judgment.* They are not a confirmation of superior pilot ability.

> Ironically, many of the characteristics of the high-risk naval aviator are also the characteristics of the best tactical pilots in the Navy. The good naval aviator will characteristically display aggressiveness, confidence in his ability, and a desire to be second best to no one. He enjoys the camaraderie of naval aviation, the *esprit de corps* of the squadron, and he can hold his own swapping sea stories at the O-club. The difference, however, between the type of pilot we want in the Navy and the high-risk aviator is discipline and judgment. The good naval aviator knows his capabilities and his limits. He knows his aircraft's capabilities, and he flies it to its limits – but not beyond. He realizes that he must be psychologically and physically fit to perform the demanding tasks required of him in the best fashion. In summary, the good naval aviator approaches his flying in a professional manner. The naval aviator we want today must be a team player who can cooperate with and coordinate the efforts of other crewmembers, wingmen, and ground tactical controllers. His complicated systems demand some of his nonflying hours be spent studying operations and tactics manuals, and his off-duty hours not be spent exclusively drinking and swapping tall tales at the O-club.[1]

Investigations sometimes reveal, after the fact, that the individual had been guilty of flight violations. Such was the case of these pilots. The sad part, however, is that those in his squadron who knew failed to communicate these facts to the ASO, Ops, XO, or CO – someone who could do something about it. It is difficult to report a fellow pilot, but when one is cognizant of dangerous, gross, or flagrant violations, he has a moral obligation to speak to the guilty one and bring it to the attention of competent squadron authority.

As one of the endorsers said, "Those people who knew of the previous unsafe flying practices of the two command pilots and who yet failed to report this to appropriate authority did their commander, the victims, and the country a great disservice." It's not easy to embarrass a friend, but it's easier than going to his funeral.

Think about it.

[1] Robert A. Alkov, Ph.D., "Personality Characteristics of the High-Accident Risk Naval Aviator," *APPROACH*, Mar. 1977, pg. 18-21.

The NFO mission commander and safety of flight

By LT Vern Lochausen
NROTC Unit, University of Texas

IN our modern, all-weather, all-mode, multiple-redundant Navy we have in force the naval aviator/naval flight officer team. This team concept, necessitated by the ever-increasing highly-instrumented, electronic-flying environment, is a blend of the talents of two highly skilled professionals. The concept presupposes that the two professionals will perform effectively and harmoniously, and that each will have a view of his and his partner's responsibilities prior to rotate time. This relationship works effectively because the pilot does stick things, and the NFO does NFO things. Each attempts to keep his teammate honest and safe while performing his own specialized tasks.

With the advent of the MC (mission commander) concept in some aviation communities comes a pair of obvious combinations: the pilot MC with an NFO, or the NFO MC with an aircraft commander. In the second case, the NFO MC is responsible for the successful and effective completion of the mission, the associated reporting and training, pre- and postflight briefings, aircrew position manning, crew and mission systems readiness, and crew morale. The aircraft commander is responsible for the aircraft safety of flight, flight planning, aircraft readiness, compliance with FARs, OPNAVINST 3710.7H, NATOPS, and the well-being of the crew.

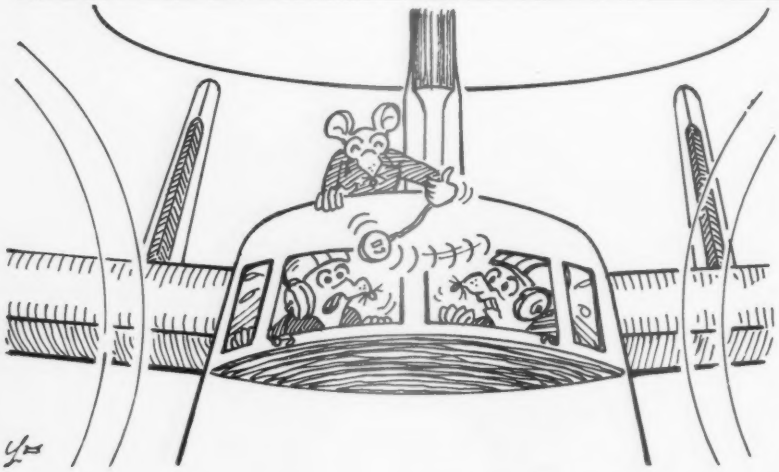
OPNAVINST 3710.7H is very explicit in the definition of the fine line between the areas of responsibility of the NFO MC and his aircraft commander. "He [the MC] shall be responsible for all phases of the assigned mission except those aspects of safety of flight which are related to the physical control of the aircraft and fall within the prerogatives of the pilot in command." Further clarification is provided in the areas of mission initiation, continuation, and termination. "In the absence of direct orders from higher authorities cognizant of the mission, the responsibility for starting or continuing a mission with respect to weather or any other condition affecting safety of the aircraft rests with the pilot in command." Clearly, then, the NFO MC must support his aircraft commander in all safety of flight decisions and cannot, by any means, forcefully alter that decision. The prudent NFO would rarely feel safe in a situation wherein his aircraft commander was unsure of safety of flight.

A problem arises in the safety of flight issue when command pressure is placed (incorrectly) upon the NFO MC to pursue a can-do policy and urge his aircraft commander to respond less cautiously in marginal safety of flight situations. No crew wants the reputation of nonhackers, nor do they want to prang their aircraft and their bodies in an unsafe situation.

In my personal experience as an NFO MC, I have witnessed senior members of squadrons as well as junior officers who have ignored the relationships inherent to the pilot-NFO team in safety of flight and mission accomplishment areas. The result can be the bombasting of a crew (in their absence) at an all-officers' meeting; fruitless power struggles between junior officers on a crew under the pressure of impending severe weather at takeoff time; or command pressure placed to "can-do" when the aircraft commander or NFO feels that the aircraft needs some tender, loving care. It can undermine the effectiveness of the mission.

A review of the responsibilities of pilots and NFOs in the context of the NFO mission commander/aircraft commander combination should be conducted periodically by junior officers assigned to a crew. Operations and maintenance officers, XOs, and COs need to clearly define command policy and predict responses in given situations. Mission commander meetings, with all MCs present, can be an effective means of getting this issue out in the open. Such meetings can also provide command guidance and understanding of what occurs when the junior officer is faced with a perilous mission/safety of flight situation. Such frank discussions could alleviate some anxiety and chagrin and, more importantly, save some lives. ◄

Anymouse



Gas Cap Forgotten

AN E-2 was to be defueled by 1000 pounds. About 2030, the word was passed by maintenance control to the line to take action. The plane captain began getting the *Hawkeye* ready, including opening the gas caps atop the wings. He stood by for 2 hours awaiting the defueling crew. He was then relieved by a second plane captain.

The second plane captain was advised to ensure the gas caps were closed after defueling. About 2330, the word was passed to cancel the defuel. The second plane captain, without thinking, merely split after locking the aircraft.

The next morning the aircraft was manned, started, and taxied to the catapult for launch. Luckily, the assistant maintenance control officer spotted the fuel cap flapping on the starboard wing. The pilot shut down while the plane captain went topside to secure the cap. During the delay, UNREP began and the flight was cancelled.

Just whoinhell preflighted the *@*$&! bird? No one! Normally, a pilot checks topside *after* the plane captain has completed his preflight. That morning the copilot was required to perform the walkaround inspection, had to secure some loose gear, and give a ditching brief to a passenger. He didn't go topside.

Fortunately, the alert assistant maintenance control officer saw the dangerous situation before the aircraft launched for a field some 300 miles away. Since the E-2 had a history of fuel quantity gage gripes, the pilots could have launched, probably wouldn't have paid any attention to a rapidly decreasing fuel quantity reading, and undoubtedly would have had a sudden dual-engine flameout. Bad news!

How come the plane captain didn't doublecheck his buddy the first thing the next morning? How come the plane captain didn't go topside during his preflight? How come the copilot didn't check topside security? Which was most important – securing loose gear, briefing a passenger, or conducting a preflight?

Preflightmouse

Stumble On

A FLIGHT of six heavy helos were returning to base after a mission when less than VFR conditions were encountered. The major, flying as mission commander, elected to sneak under the weather (an old helo pilot trick – tops were only at 6000 feet). To complicate matters, the area was

The purpose of Anymouse (anonymous) Reports is to help prevent or overcome dangerous situations. They are submitted by Naval and Marine Corps aviation personnel who have had hazardous or unsafe aviation experiences. These reports need not be signed. Self-mailing forms for writing Anymouse Reports are available in readyrooms and line shacks. All reports are considered for appropriate action.

REPORT AN INCIDENT
PREVENT AN ACCIDENT

both mountainous and heavily populated.

As the flight continued, the weather deteriorated to less than 300 feet and 1 mile visibility (less than special VFR and certainly less than FAA or wing minimums for helo VFR flight).

Nonetheless, the major elected to continue picking his way under the weather for his flight of six, which also had the squadron CO flying in another helo. At one point, the flight was required to fly below 300 feet over the active runway of a major Air Force base with an Air Force transport on final.

The tower operator could not see the helos – that's how bad the weather was! So he asked for their position and altitude. The mission commander reported the flight clear of the active and at 500 feet. Now, really! To increase the problem, fuel was now a consideration for the flight.

Luckily, the last mountain pass we tried was open, and we successfully got through to land at sweet Homefield. Whatever happened to IFR flying with IFR approaches to landing? Whatever happened to solid judgment and headwork required for all aircraft commanders – especially mission commanders? Needless to say, we had a very close call.

Gladtobealivemouse

Laxity on Detachment

WHILE on an ACM detachment to a desert airbase, another detachment from our homebase was observed launching, recovering, and servicing aircraft while dressed in cutoffs and shower shoes. When one of the pilots from the other det was asked about it, he said that the maintenance personnel only brought coveralls – no uniforms – and that the coveralls were too uncomfortable in the warm weather.

I can only wonder how uncomfortable it might have been had one of them walked behind a turning aircraft or had splashed some lox while servicing, or if there had been an accident on the line involving fire.

This type of lax safety attitude is unforgivable on the part of the det OinC as well as the senior maintenanceman. Dets offer a change of pace and often a "looser" atmosphere, but this is no justification for disregarding safety.

Properlyattiredmouse

Checkflight

DURING a recent test hop within the squadron, the impossible happened to those who should know better. We had tested a bird earlier in the morning, and at that time, jettisoned fuel over water to check the gage. A lively discussion ensued concerning several embarrassing examples of inadvertent jettisoning on the ground that had happened to others. Of course, there were the usual guffaws and Delta Sierras.

Little did we know that we would soon become victims. About 1600, maintenance called for an additional test hop on an aircraft. In gleeful anticipation of conducting a full card at 1630, the pilots went through the NATOPS prestart checklist. The pilot read off the checklist as the copilot (sitting in the right seat) responded.

Confident that the prestart checklist was complete, the pilots started the APP (auxiliary powerplant). We soon realized that something was amiss as the crew chief frantically ran up to the cabin, waving his arms and screaming, "Secure the fuel!"

Luckily, having discussed the situation earlier, the jettison switches were secured immediately. (Had we secured the APP, the results would have been disastrous.) Apparently, the copilot had turned on the jettison switches vice boost pumps, due to inattention. Hard to believe, but true.

Moral: "The *ASO* is as vulnerable to a Delta Sierra attack as *you* are," or "Don't be fuelish."

Skittishmouse

Don't Turn 'em While Hot

A C-131 landed and taxied to the VIP spot and shut down. The crew disembarked and proceeded to pull each prop through until the props were in the dress position. When the plane commander was questioned about this hazardous procedure, he remarked:

- The mags are ground-checked prior to shutdown.
- The admiral likes the props dressed.

I would certainly hate to see, as I'm sure the admiral would also, the side of the aircraft, ramp, and surrounding area dressed with the pieces of the young pulling through the props.

It might be worthwhile to remind everyone that ground-checking mags and the mags in the OFF position is not the main concern, but rather trapped fuel. Because of the engine heat, this could be the culprit that would cause the engine to turn over. Recip engines have been known to turn over all by themselves while hot because of trapped fuel.

Reciprodent

PERSONNEL

BACK in the late fifties and early sixties during the latter days of BUAER, the short life of BUWEPS, and the beginning of AIRSYSCOM, engineers exerted a considerable emphasis on improving the "ilities" – reliability, dependability, maintainability, etc. – in aircraft and component design. They were successful. Weapons systems now have far fewer mechanical failures than those of 20 years ago.

However, there has been no comparable lessening of human failures. Pilot, maintenance, and other personnel errors continue to be the usual cause factors in most mishaps. For example, consider two incidents which occurred in the P-3 community in which personnel did not perform as expected nor in accordance with procedures.

A flightcrew was out flying a familiarization flight for a PUI (pilot under instruction) and a FEUI (flight engineer under instruction). Prior to the flight, the IP (instructor pilot) and IFE (instructor flight engineer) had thoroughly briefed each other on the game plan for the trainees. However, they did not discuss specific courses of action they would employ during flight.

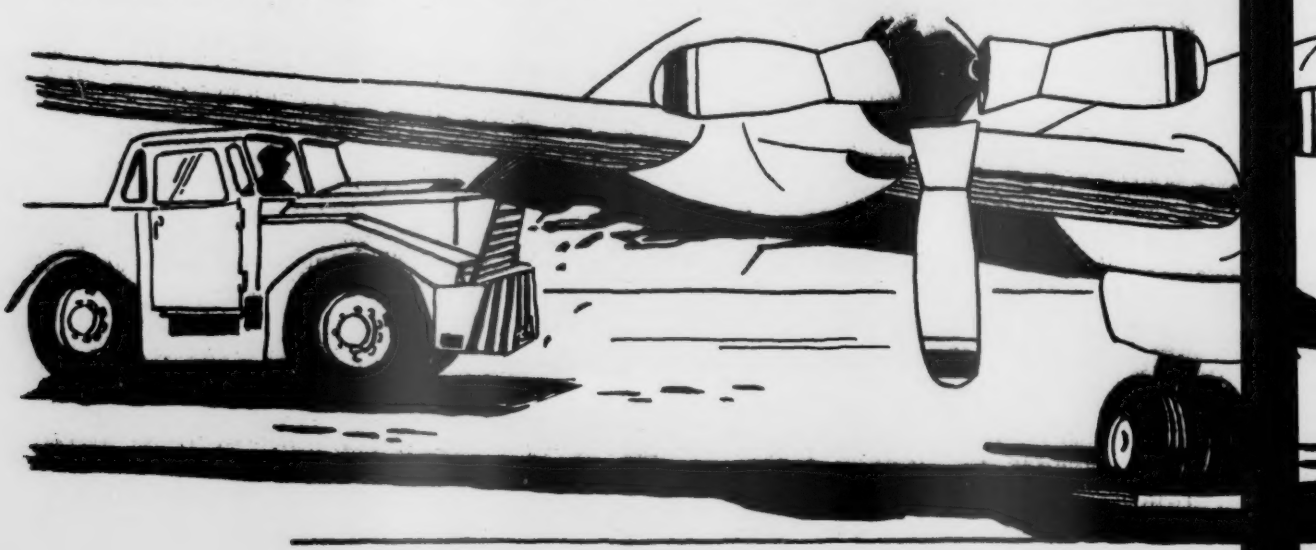
During the high-work portion of the flight, the IP and IFE decided to simulate a "prop fails to feather" problem. They used an engine-driven boost pump PRESS LOW light to imply a fuel leak with a simulated visual confirmation to trigger the proper emergency shutdown procedure on No. 4 engine.

The IFE pulled the appropriate circuit breakers to induce a mechanical feather situation. When the No. 4 E-handle was pulled, the No. 4 prop went to a mechanical feather RPM and was reported still rotating by the IP. The PUI instructed the FEUI to execute the "fails to feather" procedure. The FEUI pushed the E-handle in and pulled the oil tank circuit breaker. The PUI commented that he didn't think one should push the E-handle back in during a fuel leak situation.

The FEUI suggested to the PUI to wait until he had completed the "fails to feather" procedure and then discuss the point. The IFE reset the prop feather control circuit breaker causing the prop to feather. The PUI and FEUI resumed discussing considerations for not pushing the E-handle back in after a fire or when the possibility of fire exists. The FEUI, in reviewing aloud the emergency shutdown checklist, touched the HRD (high rate discharge) button and discharged the engine fire bottle.

The IP and IFE took control, terminating the problem. They confirmed that No. 4 HRD control circuit breakers had not been pulled and presumed the bottle had fired. They conducted the emergency shutdown and restart checklists. The engine was restarted, a descent was begun, and a precautionary landing was made.

The briefing between the IP and IFE was incomplete because they didn't discuss what actions the trainees might take, nor did the IP instruct the IFE when to take control if the drill got out of hand. Both failed to exercise proper supervision. All instructors should remember not to permit



PROBLEMS

trainees to take unilateral actions for which there is no out. 'Tis far better to walk a student through a training situation than turn him loose and have him foul it up because of uncertainty. With the latter, it results in degeneration of confidence, and negative learning replaces getting some smarts.

After landing, the P-3 was taxied to the line. A check was pulled prior to another pilot training flight. While in the chocks, the lineman was notified that the aircraft auxiliary power unit was inoperative. He was told to get an NC-12 (electrical unit) and GTC-85 (huffer) to start.

The lineman and a GSE-school graduate, under training for squadron qualification, proceeded to the GSE area where an NC-12 was already hooked up to a tug. The lineman noticed the GTC-85 was missing a piece of hose and directed the trainee to take the GTC-85 to the aircraft while he tried to find a hose.

The trainee drove slowly out to the aircraft and approached it from aft of the extended flap. He didn't like the looks of things so he stopped, backed up a short distance, and then moved forward again. He wanted to get the NC-12 as close as possible to the aircraft so the lineman could use the 25-foot power cord of the NC-12.

As the tug moved forward, the trainee knew it wouldn't clear the flap, and while turning away, stomped on the binders. The momentum of the tug carried it into the starboard flap. Zap! The trainee backed up to relieve pressure on the flap, shut down the tug, and reported the crunch.

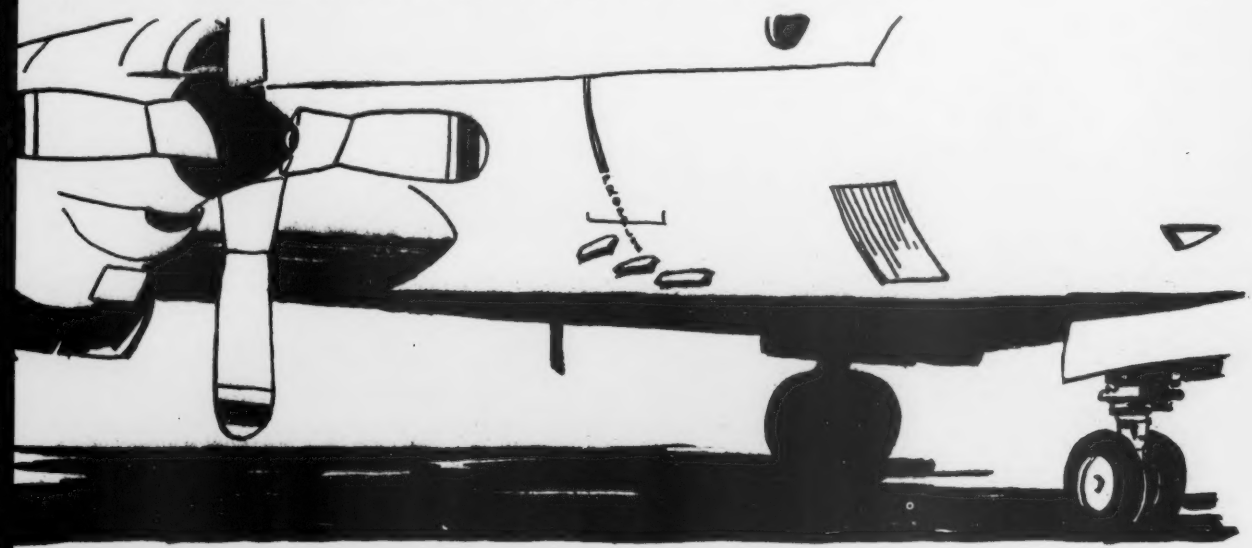
Damage to the flap consisted of a tear along the trailing edge fairing. Even though it was minimal, the stage had been set for much worse.

Supervisory error was the prime cause factor in this crunch. There wasn't anyone around to supervise the trainee in a difficult maneuver. Poor judgment by the trainee was also a major factor. No one knows why he didn't just proceed to the general area of the aircraft and wait for the lineman or other help.

As so many squadrons have done before this activity took the following action:

- Rebriefed all hands on the importance of safety in all squadron operations.
- Specified that supervisors at every level must exert positive leadership, stressing strict adherence to proper procedures.
- Reviewed applicable safety directives and their GSE training program.
- Enforced a continuing OJT program for line personnel.
- Called for daily inspections of GSE.
- Established a regular weekly period for formal ground training for all personnel.

Now if someone can figure out how to improve human "ilities" (dependability, responsibility, reliability) as the engineers did with hardware, every outfit will see a drastic reduction in personnel errors.



"Hey, Skyhawk! What's your hangup?"

By Richard P. Shipman
APPROACH Writer

"NAVY Tower, this is *Skyhawk* 212. I've got an unsafe starboard main gear indication. I'd like to orbit overhead the field and have Playmate 214 check me out."

"*Skyhawk*, 212, Roger. You're cleared to orbit overhead at 3000 feet and switch base frequency."

"212, this is 214. Your starboard gear door's open, but the mainmount has only extended a couple of feet out of the well. It appears to be jammed. Recommend you try some positive and negative Gs to get it down."

Ten minutes later, after positive and negative Gs, increased airspeed, and various other acrobatic maneuvers, the A-4 still had the gear wedged in its wheelwell. Running out of fuel and ideas, the pilot retracted the gear and set up for an intentional wheels-up landing. An LSO coached the pilot through a low, flat approach, and the *Skyhawk* settled smoothly onto the runway – the impact cushioned by the two empty 300-gallon drop tanks. The A-4 ground to a halt after about 1500 feet of travel, sustaining only minor damage to the radome, forward TACAN antenna, and the drop tanks.

Was this an isolated occurrence in the A-4 community? Hardly! Since 1968, no less than 60 A-4s have had main landing gear problems that have necessitated intentional wheels-up landings. Fortunately, the *Skyhawk's* wheels-up landing record is as good as the landing gear hangup problem is bad. Of 78 wheels-up landings since 1968 (60 intentional, 18 unintentional), all but 11 resulted in only incident classification (less than 100 hours to repair). More importantly, there has been only one instance of major pilot injury during a wheels-up landing.

By far, the greatest reason for intentional gear-up landings is mainmount hangups in the wheelwells. So what causes these hangups? Causes for the hangups can be grouped into three general categories:

1. Miscellaneous material failures/malfunctions and maintenance error not associated with deflated struts (3 cases).
2. Catapult hook interference (8 cases).
3. Deflated shock strut assembly (33 cases).

Main landing gear hangups due to deflated shock struts have been a recurring problem in the A-4.

Experience has shown that wheels-up landings in the A-4 are relatively safe – even with only a centerline drop tank installed.

Incidents in the first category are infrequent and isolated. Problem number 2 has been virtually eliminated by an airframes fix. That leaves number 3. The high number of incidents in this category clearly indicate what the primary reason for strut hangups is: deflated shock strut assemblies. Here's what happens.

The shock strut is serviced with a combination of hydraulic fluid and nitrogen gas. When a strut loses the nitrogen pressure, there is no force to overcome the effect of the windstream when the gear is lowered (the A-4 mainmounts lower into the relative wind). This causes the wheel to jam against some part of the wheelwell assembly, usually the aft gear door, or some portion of the brake hose snags on some protrusion in the wheelwell.

Why does the strut deflate, you ask? For several reasons. The most common reason is failure of a D-ring (presently being replaced by a T-ring) seal in the lower portion of the strut. As the strut moves up and down absorbing the shock of landing, the D-ring wears, loses elasticity, hardens with age (particularly in cold weather), and eventually deteriorates to a point where the gas escapes.

Maintenance error is another reason for strut deflation. Undertorquing the Schrader Valve; underservicing the strut with nitrogen; overservicing the strut with hydraulic fluid; installation of the incorrect D-ring seal; all of these are common examples of maintenance error.

Whatever the reason, though, the strut will usually collapse in the wheelwell without giving any advance notice. When this happens, there are a few techniques you can try that may dislodge the stuck mainmount. NATOPS allows speed increases up to 350 KIAS with the gear down in an attempt to get a down and locked indication. You can also try positive and negative Gs. Another technique that has worked in the past goes as follows: raise the gear, put negative G on the aircraft, extend the speed brakes, and immediately lower the gear. The only problem with this technique is that it's tough to do singlehandedly. This is particularly true if the port mainmount is the one that hangs up. If that is the case, the "nutcracker" (weight-on-wheels) microswitch frequently remains in the "weight-on" condition, due to the deflated strut. This requires the pilot to use the override feature to lower the gear handle. Even if you are alone, though, this maneuver is worth a try.

One word of caution about attempts to get the gear down: don't be overzealous. One A-4 pilot tried the negative G/extend-the-speed-brake-trick, followed by lowering the gear and pulling positive G. Well, the gear came down, all right, but in the process, the aircraft sustained considerable damage to the gear assembly, hydraulic lines, and other parts. (See photo, pg. 21.) In the process of maneuvering the aircraft trying to unseat the mainmount, the pilot let the airspeed build up to around 400 KIAS, and then he dropped the gear and honked on the G. This was a case where more damage was done to the aircraft trying to get the gear down than would probably have resulted from an intentional wheels-up landing.

If your maneuvering doesn't produce the desired results, you will have to retract the gear and make an intentional gear-up landing. As long as the gear come up above the level

LCDR Norm Justesen of VC-12 used the proper technique during this intentional wheels-up landing.

Good pilot technique results in minimum damage for the wheels-up landing.

of the drop tanks, the landing can be made. If this is not the case, you will have to refer to the emergency flip pad for appropriate action. Assuming the gear do come up, here is what you should do next:

Plan the configuration. Retain all inert stores on the aircraft. Any inert stores on the aircraft will help cushion the impact. The 2- or 3-drop configuration is the best for minimizing damage, but there have been 11 cases of successful wheels-up landings with only a single centerline tank. There was even one situation of a belly landing in the clean configuration; even this resulted in only minor damage.

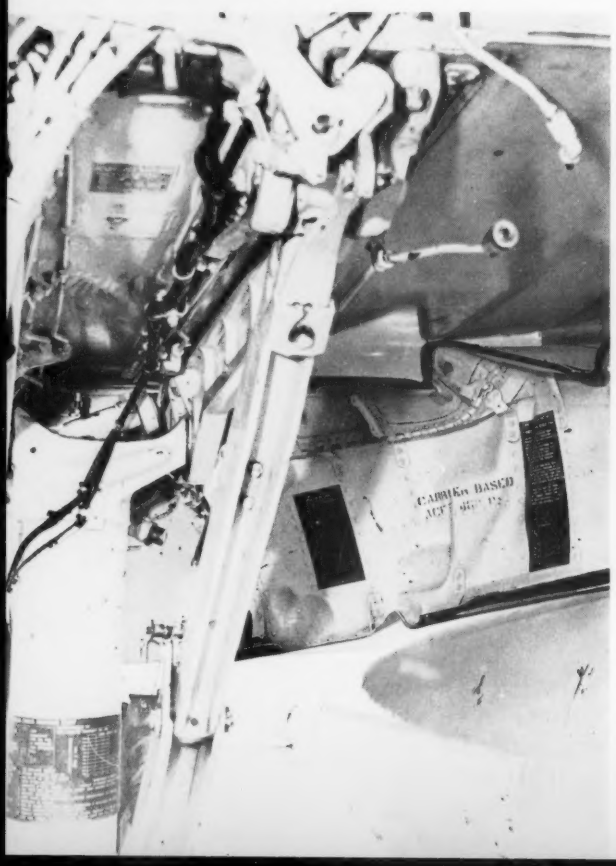
Get a visual checkout. If at all possible, have somebody look you over so you will know if the gear is stuck in the well or appears down and locked. If it looks like it's down but the gear indicator reads unsafe, it is probably an indicator problem, and an arrested landing vice a wheels-up landing would be called for. Also, you want to know if the wheelwell doors are open. If they are, there's no point in pulling the emergency gear extension handle, as that only unlocks the doors.

Request the arresting gear removed. The only serious injury sustained by a pilot as a result of wheels-up landings occurred when the aircraft's probe speared the arresting gear wire, causing it to travel up over the nose and shatter the canopy.

Put an LSO on station, if possible. He can help you fly the kind of approach that will minimize damage to the aircraft.

The culprit.

This brake hose frequently catches on some part of the wheelwell when the strut deflates.



If improper techniques are used, more damage can be done getting the gear down than would result in an intentional wheels-up landing.

Burn down to minimum fuel. The less fuel in the aircraft, the less the chance of postlanding fires. *Make sure* any external stores you are landing on are empty. In one wheels-up landing, the instructor pilot secured drop transfer to test his student, but forgot to turn it back on. The pilot subsequently arrived at Homeplate and had a mainmount hangup, necessitating a wheels-up landing. Unfortunately, the instructor pilot failed to check his drop fuel and landed with the fuel still in the drops. The fuel ignited and engulfed the aircraft as it slid on the runway, prompting the student to initiate ground level ejection.

Fly a low, flat approach. This type of approach, on centerline, will minimize the impact and lessen the tendency of the aircraft to pitch forward after touchdown. When on deck, secure the engine, attempt to hold off the nose as long as possible, and when stopped, safe the seat and egress. (You'll know it was a wheels-up landing when you can step right out without the assistance of a boarding ladder!)

Even though the A-4 has a good wheels-up landing record, it would obviously be desirable to avoid the situation altogether. Some areas that may help to avoid strut-deflation-caused hangups are:

- Do a good preflight. Check Schrader Valve cap on, even strut extension on both mainmounts, and a minimum of 1 inch chrome showing for typical A-4 fuel weights (full internal, half drops). If the amount of chrome showing is marginal, call maintenance so they can put a gage on the strut to measure the nitrogen pressure accurately.
- Don't attempt to service the struts at bases other than those that have A-4s.
- Keep records on struts. Frequency of servicing, number of landings, overhaul dates, and similar information can be helpful in identifying struts about to fail.
- Regularly repack or overhaul the struts as part of the periodic phase inspections. (VT-7 has been trying this procedure on an experimental basis, with approval from CNATRA.)
- Keep the exposed chrome scrupulously clean. Cleanliness is important to prevent grit and dirt from getting into the D-ring seal and causing leaks and deterioration.

Drop tanks will never replace wheels as the desired landing support. You can, nevertheless, be comforted by the knowledge that you do have a relatively safe emergency backup capability should the necessity arise. Be knowledgeable about the struts, maintain them well, and you'll probably never need that backup capability. ◄

STROBE-EFFECT-
SEIZURES

During a routine cross-country flight in one of our squadron's H-46 helicopters, the following incident occurred.

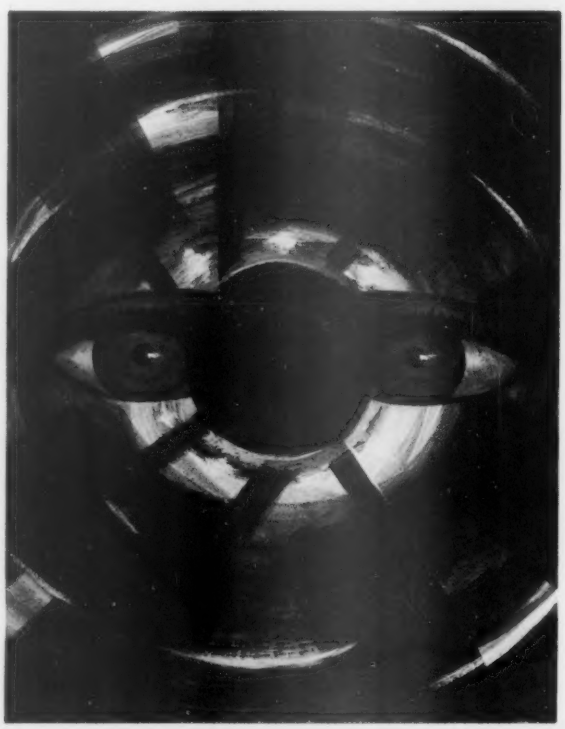
"Five minutes after departure for NAS Pensacola on the return flight from a short detachment at NAS Jacksonville, one of the non-flightcrew maintenance personnel riding as a passenger suffered what appeared to be an 'epileptic fit.' He first went into convulsions and then stopped breathing. While the aircrewmen applied CPR (cardiopulmonary resuscitation), the pilot turned back and notified Jax Tower of the problem and asked for an ambulance. One minute prior to landing, the man had resumed breathing on his own but was still unconscious. Upon landing, a flight surgeon and medical team transported the man to the NAS Jacksonville Hospital Emergency Room."

A thorough check of the man's medical record revealed no previous incident or susceptibility to seizures. The man was diagnosed as having had a "strobe-effect-induced grand mal seizure." The man reported that prior to the seizure, the strobe effect of the sun shining through the rotor blades had been mildly discomforting, and closing his eyes did not eliminate the strobe effect. A subsequent neurology workup and EEG on the man showed no abnormal tendency toward seizure. It may, therefore, be assumed that all of us, flyers and nonflyers alike, could possibly fall victim to a "strobe-effect-induced grand mal seizure" while flying. The following aircraft incident report involving an HH-2D illustrates the danger involved when a pilot at the flight controls experiences such a seizure:

> Prior to returning to Homebase, while the helo was turning on the deck, the copilot remarked that the light passing through the rotors was making him feel bad. The pilot asked if he was too ill to continue. The copilot replied negative. Several minutes later at 800 feet MSL, on a westerly heading, the copilot again remarked that the light through the rotors was making him "feel funny."

Approximately 1 minute later, the pilot noticed a sharp decrease in collective. He noticed that the copilot was very rigid with his hand on the collective. The pilot pulled up collective and requested the crewman's assistance in getting the copilot off the controls.

With the descent stopped, the copilot again



NDUCED
IN FLIGHT

By LT Gary Hobbs
HC-16

stiffened and applied full left rudder. The pilot used both feet on the right rudder to control the yaw. The crewman, while freeing the copilot's leg, pinned the pilot's radio cords to the bulkhead, preventing his head from moving. The pilot pushed the crewman free as the copilot's leg was freed. Noticing the copilot's blue color, the pilot had the crewman check to see if he had swallowed his tongue. The copilot then turned, knocking the No. 1 engine condition lever out of the FLY position. As the crewman and pilot simultaneously returned the lever to FLY, the copilot kicked the cyclic full left, jammed the rudders, and began vomiting.

The crewman freed the copilot's leg from the cyclic and was trying to free his foot from under the rudders while the pilot declared an emergency, requested crash crew and ambulance assistance, and completed the landing checklist. While talking to the crewman, he keyed his UHF to keep the tower informed of the cockpit situation. A running landing was selected due to the jammed rudders.

After landing, the pilot secured both engines and applied the rotor brake. The crewman exited the aircraft to assist the crash crew in removing the copilot. The pilot posted a crash crewman near the rotor brake, which was hot due to the rapid shutdown. The copilot was removed from the aircraft and taken to the hospital.

The suspected cause of this incident was "Flicker Vertigo." The squadron recommended that "Pilots of all aircraft, but especially helicopter pilots, should be reminded that, under certain circumstances, they may be susceptible to flicker vertigo. Such vertigo will be, at least, disorienting, and at worst, completely incapacitating. In this case, a catastrophe was averted due to the coolheaded professionalism of the pilot and aircrewman."

The following excerpt from pg. 366 of the *U.S. Naval Flight Surgeon's Manual* (which is a reprint of a 1956 APPROACH article) shows that inflight seizure is not a danger limited to the helicopter community:

> After flying for some time at an altitude of 16,400 feet, a pilot in a single-seater propeller aircraft made a perfect landing. However, he did not taxi the plane to the hangar. Instead, the plane remained motionless, its propeller revolving slowly. The pilot was found bent over the controls, unconscious.
>
> At first it looked as though the pilot had not used his oxygen mask. However, in this case, the pilot had lapsed into unconsciousness after making a good landing.
>
> The rays of the low-lying sun were shining on the slowly turning propeller blades. Reflected flashes of light were being thrown on the pilot's face at a rhythmic rate of about 12 per second.

Although not a common occurrence (only four documented incidents since FY-69), the possibility of aircrew seizure while flying is a very real danger. We can all imagine the terrible consequences of a pilot suffering a seizure in a single-piloted aircraft or during certain flight regimes, e.g., landing, takeoff, low-level. Pilots and aircrew, especially helo, should be aware of this phenomenon and its possible catastrophic results. The following article by LCDR Jane McWilliams, MC, USNR, discusses the phenomenon commonly known as "Flicker Vertigo" and points out symptoms and treatment of grand mal seizure. Suffice it to say that from the pilot's standpoint, if an oncoming seizure is suspected, land or get out of the cockpit – preferably both!

FLICKER-INDUCED SEIZURES

alias flicker vertigo

By LCDR Jane McWilliams, MC, USNR
TRAWING Six Flight Surgeon

IT has been known for a long time that under certain circumstances, grand mal (generalized) seizures can be induced in a small number of individuals by exposing them to flashing light. This seizure phenomenon has occasionally been lumped with other common effects of flicker (irritation, nausea, dizziness, drowsiness, disorientation) under the broad label of "flicker vertigo." Unfortunately, the word vertigo has a specific meaning to both aviators and physicians which makes the term "flicker vertigo" confusing. It is not even certain that the different effects of flicker are related. When talking about the seizure effect of flicker, therefore, it is best to use the term flicker-induced seizures.

There are countless ways that normal flight operations can cause flickering in the critical frequency (1-20 flashes/sec). Having an anticollision light on in the clouds, flying past a row of clouds through which the sun is shining, operating a single-engine prop plane at low RPM while facing the sun, or operating a helo in the bright afternoon sun can all cause the flicker phenomenon. One hundred percent RPM on H-46s is 264. Multiplying this by 3 (3 blades) and dividing by 60 to convert to seconds:

$$\frac{264 \text{ rev/min} \times 3 \text{ flashes/rev}}{60 \text{ sec/min}} = 13.2 \text{ flashes/sec}$$

It seems obvious that all the flight surgeon has to do is find the individuals who are sensitive to flicker-induced seizures and keep them off aircraft. This is easier said than done. Since 1961, the Navy has required a baseline EEG (electroencephalogram or brain wave test) on all student naval aviators as part of initial screening for flight training. The test has been required on student naval flight officers since 1967 and student flight surgeons since 1971. Since 1967, these EEGs have also been recorded during photic stimulation (flashing lights), and those showing abnormal brain wave response were eliminated from training. A check of the Safety Center's files, however, reveals at least two cases since 1969 of previously screened individuals who had seizures during flight which could not be explained by other factors. At least one of these seizures was probably flicker-induced. So, even with EEG screening, one still cannot predict with certainty which people will or will not have seizures. Because of the low yield of EEG screening, it is not practical to test all aircrewmen and potential passengers.

Besides the flicker phenomenon, hyperventilation,

fatigue, and overindulgence in alcohol have been known to trigger seizures in individuals prone to seizures. Head trauma, hypoxia, hypoglycemia, electric shock, drug withdrawal, and cold exposure can cause seizures in previously normal individuals.

Fortunately, seizures during flight are very rare occurrences. However, even with the best screening techniques flight surgeons have, seizures will occur occasionally on naval aircraft. Everyone in naval aviation needs to be aware of the possible hazards of seizures in the aviation environment. Everyone should be able to recognize a seizure and institute appropriate first aid measures. ◄

Recognition of a Grand Mal (Generalized) Seizure

1. Initially, the victim may complain of a strange feeling, or there may be no warning at all.
2. The victim may cry out; if standing, he will fall to the deck and lose consciousness.
3. His muscles will at first become tense and his body will become rigid. Breathing may stop temporarily and his face may turn blue.
4. The muscles of the body will then begin to jerk spasmotically. Breathing usually resumes but may be labored if the tongue has fallen back, obstructing the airway.
5. The victim may bite his tongue, froth at the mouth, or lose bowel and bladder control during the attack.
6. The seizure is usually over in a few minutes. The victim may be unconscious or semiconscious for a variable period of time afterwards.

First Aid for Seizure Victim

1. If possible, place a gag between the patient's teeth to prevent tongue biting. A wallet or a plastic airway makes a suitable gag. Avoid injuring the patient by trying to force something between clenched teeth. Never use your hand as a gag.
2. Loosen the patient's clothing.
3. Make sure the patient starts breathing again and has an open airway. Initiate CPR if necessary, but it rarely is.
4. Protect the patient from injuring himself during the jerking phase. Do not forcibly restrain the victim unless this is necessary for flight safety. Injuries to the patient can be caused by overzealous restraint.
5. After the seizure, keep the patient warm and quiet. Turn his head to the side to prevent his choking should vomiting occur.
6. Anyone who has a seizure should be evaluated by a medical officer as soon as possible.

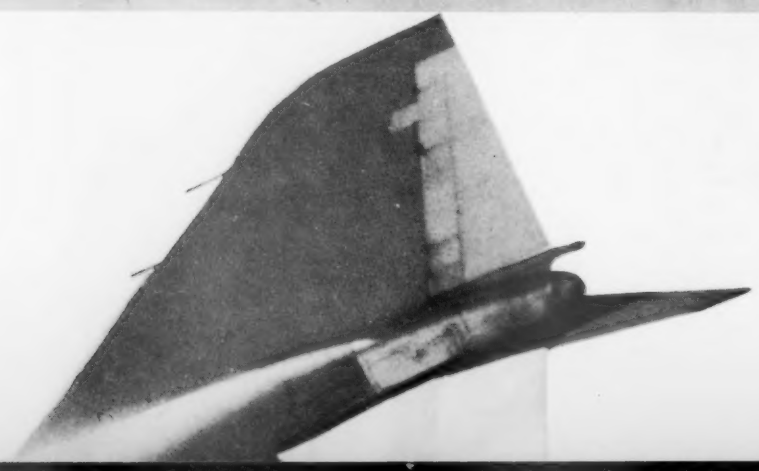
SPINNING

By LTJG John I. Foster III
VF-103

SPINS are disorienting – especially when unintentional. All too often they have resulted in the loss of aircraft and crewmen. Because of this, VF-101 (now VF-171), the east coast F-4 RAG, in conjunction with the Test Pilot School, Patuxent River, MD, initiated a spin training program. All replacement pilots undergo this training prior to commencing ACM (air combat maneuvering) training in the *Phantom.* Since I was the first pilot to participate in this program and then actually spin (and recover) an F-4, I am able to evaluate, from my own experience, the importance of spin training – in flight, in the simulator, and in departure/out of control briefings. The following account of my spin, which was recorded in its entirety on the ACMR (air combat maneuvering range), gives my impression of the merit of preparatory training. Incidentally, this ACMR tape is being used by the VF-43 adversaries during the ground lecture portion of the Fleet ACM training program, regularly participated in by all east coast fighter squadrons.

My RIO, LT D. R. MacLaren, and I were scheduled to fly a 2V2 ACM hop against a section of F-5s. The lead F-4 went down on deck, however, so we launched on a 1V1V1 hop instead. I positioned myself line abreast between the two bogies, and when the fight commenced, I zoom climbed at an angle of 70 degrees. Shortly thereafter, I attempted a rudder reversal into an F-5 that was closing to missile range. To accomplish this, I used right rudder and slight opposite aileron. At this time, with an indicated airspeed of 180 knots and an altitude of 30,000 feet, my aircraft departed violently (-2G) to the left. As required by NATOPS, I applied full forward stick and neutral rudder and retarded power to the afterburner detent. Instead of quickly recovering to controlled flight as occurs during high-speed departures, the aircraft continued a rapid but oscillatory port yaw. Both engines suffered compressor stalls. I further reduced power to IDLE and deployed the drag chute, but it failed to blossom. After two oscillatory turns, the spin became fully developed, and I applied anti-spin controls. One steady state turn occurred before the angle-of-attack dropped off the peg and the aircraft unloaded very slightly. I initiated recovery from the ensuing spiral at 18,000 feet and effected recovery by 11,000 feet.

Tactically, rudder reversal using a large rudder input with opposite aileron provides a reduction in turn radius and allows the pilot to maintain sight of the bogey, thereby minimizing his potential to rendezvous during the turn. To avoid a departure, however, angle-of-attack must remain in a controlled, moderate range. In this case, either because of insufficient forward stick application or loss of stabilator authority at slow speed, it did not. This excessive angle-of-attack, in combination with the self-induced yaw, produced the departure and subsequent spin. The drag



chute which should have contributed to a speedier recovery proved valueless by failing to open. Had it been deployed immediately after departing controlled flight while still in relatively undisturbed air, it would probably have opened properly and broken the high angle-of-attack. Finally, the tactical situation would not have been significantly more jeopardized by immediately retarding power to IDLE vice MILITARY. This would have protected the engines from compressor stalls and possible flameouts.

Despite these negative factors, there was excellent coordination between the adversary pilots, who called for the drag chute; my RIO, who relayed altitudes and airspeeds; and me. All four of us exchanged pertinent information.

These, then, were the highlights, both good and bad, of this hop. The events transpired very quickly, but would have been even more difficult to manage had I not properly prepared myself mentally. In order to recover from a spin, it is necessary first to recognize the spin and then use proper recovery techniques. The Patuxent River program, which places replacement pilots in both upright and inverted spins, emphasizes the disorienting effect of spins and reinforces the need to analyze flight instruments during out-of-control flight – a concept impressed on pilots throughout training. It does not instruct specific recovery techniques for all types of aircraft, however, hence the need for spin hops in flight simulators – extremely useful tools for instilling prompt reactions during departures/spins. Both the RAG and VF-103 regularly schedule simulated spin hops to maintain recovery proficiency. Finally, recovery procedures must be briefed prior to every flight involving high angle-of-attack maneuvering.

I'd make two recommendations for the Pax River program:

- Expand it to include NFOs.
- Assign aircraft to the RAGs at the various air stations so that pilots can periodically receive refresher spin training.

Departure is a likely possibility when flying an aircraft to the edges of its envelope. In an aggressive fight, therefore, departures are expected; spins, however, are not. Fortunately, I knew exactly how to recover, and did; most of us know aviators who have not. Entering a spin unexpectedly is, at the least, a disconcerting experience. The pilot's reactions (or lack of) during the first few seconds following departure will likely determine whether or not he will be able to recover. And the only way to ensure immediate, positive response is to have experienced out-of-control flight, to rehearse recoveries in simulators, and to review procedures regularly.

Next month's APPROACH will contain additional information on the spin training program. – Ed. ◄

Are you prepared?

A compelling desire to land

MUCH has been published and discussed in naval aviation about "get-home-itis." The lure of a familiar bed, home-cooked food, and a loving companion has prompted many a pilot to push his personal limits or his aircraft's capability. A related, although not too common concept, could be called "get-there-itis." And it is just as deadly. Excessive desire to get to a destination away from homebase despite adverse conditions are characteristics of this phenomenon. A good example of get-there-itis existed in an accident that happened to an experienced jet pilot. His total flight time, ability, and experience were all impressive; but in the final analysis, his desire to land at a cross-country base transcended good judgment and his current proficiency.

The flight originated as a routine cross-country instrument training flight. The pilot had in excess of 3000 total hours, 2200 of them in jets. His instrument time in the last 3 months, however, was only 1 hour simulated in type. The flight was planned originally for one leg, but due to poor weather at the destination, the pilot elected to make an en route fueling stop.

The flight to the first airfield was without incident. The pilot shot an en route descent to a visual approach, requesting (through tower) a rapid turnaround. While the aircraft was being fueled, the pilot obtained a weather brief. Forecast weather for the destination airport was 300 overcast and 1 mile, with intermittent conditions of 100 feet obscured, 1/4 mile visibility in light rain and fog. This meant that the field was below minimums for any approach except a PAR or ILS to a downwind runway. What's more, the PAR was NOTAMed out of service.

The pilot chose to launch anyway. Taxiing out for takeoff, tower called him stating that Center had contacted them to inquire if the pilot was aware of the weather at his filed destination. The anxious flyer replied that he had

View of electric power pole, point of first contact. Pole had been replaced at time of this photograph. Timber tract is directly behind house and barn in background.

Port wing showing leading edge tree-impact damage. Speed brakes were fully extended, landing gear and flaps up.

The pilot's suit bag was found in the approximate center of the timber tract.

checked weather at his destination, and he would be using his takeoff field as an alternate if he couldn't get in.

Takeoff and en route were normal. The pilot checked in with Approach Control and requested the latest weather observation: 200 feet overcast, 1 3/8 miles visibility. Approach Control informed the inbound pilot that the field was below mins for every approach except an ILS to Runway 04, the downwind runway. To this the pilot responded, "Negative ILS. It will have to be an ASR to Runway 04." Approach came back with the information that the field was below minimums for an ASR, and what were his intentions?

The extent of the pilot's "get-there-itis" began to surface at this point. He contradicted his earlier comment and told Approach he was ILS-equipped and it was working, but it was "questionable." In reconstructing the events of the accident, the AMB (aircraft mishap board) doubted that the pilot really knew the status of the ILS since he had flown a visual approach to his earlier landing. Even more significant, the Board's review of the pilot's logbook revealed that he *had never flown an ILS approach!* (Nor was he a general aviation pilot.)

The pilot persisted in his request for an approach, and the controller began vectoring him for an ASR approach. By now the weather had deteriorated to 100 feet overcast, 1 mile visibility in drizzle and fog. When advised of this new observation, the aviator replied, "Ah, roger, let's make an approach; we're here now and we'll give it a bloody go one time."

The one time came and went. The first approach was terminated by the controller at 2 miles because the aircraft was too far left of center and had never started its descent (due to comm problems). One more approach was requested.

On the second approach, the pilot started down to ASR minimums at 4 miles. His aircraft again drifted left in-close, and the controller directed a missed approach "if runway not in sight." The pilot replied, "That's a negative," followed by, "Ah, roger, I've gotta get out of here. I'm at low fuel state now, so you'll have to gimme a . . . "

The aircraft impacted an electric power pole at an altitude of 32-36 feet AGL. The airframe progressively broke up as it hit trees after the pole, and the pilot was killed before he could eject. The elevation of the pole was 760 feet MSL; the ASR minimums for the approach were 1140 feet MSL.

In summarizing the pilot factors in this accident, the AMB noted an overwhelming desire by the pilot to complete this flight as planned. Consider:

- He accepted an aircraft that had been griped for runaway nose-up trim on the previous flight and *had not been corrected.* (The previous pilot left the aircraft UP since the trim worked normally after the one instance.) Maintenance offered the services of a technician to stand by for the start to perform more troubleshooting, but the pilot declined, stating that he "was not worried by the gripe."
- The flight plan filed to the destination was hastily prepared at best. It omitted an initial approach fix at the destination, and filed a true airspeed higher than allowable for the requested altitude.
- The pilot disregarded warnings from several agencies about the steadily deteriorating weather conditions.
- The pilot commenced two approaches to a field below minimums, even though no emergency existed.
- He descended well below minimum descent altitude during a nonprecision approach in an attempt to land.

Most pilots, at some point in their flying career, can remember the sometimes overwhelming desire they felt to get somewhere, be it home or, as with this pilot, to a cross-country base. This is when "cooler headwork" must definitely prevail. In a demanding task such as flying, there's just no point in pressing the odds. After all, whatever is at your destination will still be there the next day. But a memorial service will keep you away forever. ◄

Letters

Inform the PAO

Annapolis, MD – The premishap planning article in the JAN '78 APPROACH gave an excellent insight into RVAW-120's systematic approach to the requirement to deal with an aircraft mishap in an orderly and thorough manner. Perhaps I can offer a few suggestions as a public affairs officer (1650) and former aviator. The important requirement to include the squadron public affairs officer in the information loop is not adequately provided in the squadron plan.

LCDR Saffell indicates in the text and diagram that the "Black Card" is used to contact the PAO if unofficial inquiries are made. The PAO is not listed on the "Green Card" personnel notification list along with the CO, XO, etc.

It is essential for the public affairs officer to be notified at the earliest opportunity in the event of any mishap, whether or not unofficial public or media inquiries have been made. Depending upon the circumstances, an aircraft mishap has the potential to develop into a major media event. PAOs have their own action bills to follow to comply with DOD, SECNAV, and OPNAV instructions. As an example, a "Public Affairs Assessment" is required for initial and follow-on OPREP 3s.

There is an excellent article in the April '76 issue of *DIRECTION* Magazine dealing with the PAO's role in aircraft accidents.

LCDR G. I. Peterson
USNA Assistant PAO

F-4 Unhooked Kochs

NAS Chase Field, TX – I agree with Detachedmouse in "Things Go Better with Koch" (JAN '78 APPROACH). The nonattachment of aircrewmembers to their ejection seat is a problem. Having myself arrived at the hold short line in an F-4 on a cross-country without benefit of attached fittings, I also know that the problem is not limited to the S-3 community. However, I take exception to his primary recommendation to solve the problem, i.e., having the plane captain strap in the pilots.

Most instances of nonattachment occur during nonroutine evolutions (cross-countries, hot switches, alert launches, etc.) in which the plane captain would be unable to fasten the koch fittings anyway. Since my unfastened experience, I have made it my personal routine to attach all fittings and hoses myself. Thus I have established a habit pattern valid for those not so routine alert launches as well as for those from the squadron line. With this routine, I feel that the chance of launching with unfastened koch fittings is considerably less than if I was used to the plane captain strapping me in.

LT C. M. Drake
VT-26

● Most aircraft have an item on the takeoff checklist related to "harness locked." This is a good reminder to tug against the various fittings to ensure you are strapped in.

What Price Safety?

FPO, New York – We are a part of a Lamps Detachment deployed on the east coast. Recently, two petty officers of our detachment have developed a careless and irresponsible habit of smoking cigarettes in the hangar, while the helicopter is inside.

This is an imminent safety hazard, compounded by the fact that there is a great amount of JP-5 on deck from the aircraft vent valves during rough seas.

After informing them several times of the safety violations and hazards, their excuse was that it's too cold, too rough, and too dangerous for them to smoke outside. The problem is complicated further by the fact that det officers are aware of the problem.

This is only one of the apparent safety hazards on our det. We have tried the chain of command to no avail. We are open to suggestions or any help that you can give us before a major aircraft accident occurs, not only destroying an aircraft, but possibly taking innocent lives.

Name Withheld

● Try a memo to your OinC. Putting it on paper sometimes works wonders.

Stress the Positive

Patuxent River, MD – I have just completed reading your outstandingly written article on responsibility for flight leaders ("Flight Leadership: A Major Responsibility," FEB '78 APPROACH). I found it engaging and feel that the incidents related were excellent examples of what may befall a flight leader if he is not properly acting in a leadership capacity. But I can't help but wonder if it cannot be even better.

As a former safety officer, I have become acutely aware that few pilots are able to fly well unless they acquire an attitude that they are capable. Another way to say it is, "That won't happen to me. It's gonna be the other guy." Yes, you may shout "Complacency, complacency!", but recognize the seeds for complacency are always there because we also stress confidence and ability. So, I learned that all the horror stories in the world don't stack up nearly as well as one sea story on how a guy did the job right. My experience was that people really take notice and try to do

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View without mirror.

Correct view of Runway 19L.

better than the driver who did well. After all, who in his right mind will intentionally imitate the local "Dilbert"?

I know that there are incidents paralleling those in your article in which the flight leader did the "heads-up" thing. You print them in your "Bravo Zulu" feature frequently. Your point that single-piloted aircraft places responsibility early is well taken. But wouldn't it be better to show our upcoming flight leaders what should be done, rather than what shouldn't be done? Or, at very least, show a side-by-side comparison of right and wrong in similar circumstances? The subject of the article was "leadership." All those leadership texts we forced ourselves through about a century ago stressed that positive leadership ("Let's do this") vice negative leadership ("You'd better not") was what got results. I sure would like to see a followup article on the proper way to be a flight leader with equally good situations cited.

LCDR J. B. Russell
Naval Air Test Center

● Good point. We'll take it for action.

Re "Successful Night Helicopter Rescue"

Monterey, CA – I've just read your "Successful Night Helicopter Rescue" article in the JAN '78 issue. The survivor almost drowned while being dragged in the horse collar. Once he got in, he needed both arms down to hold on tight so he couldn't reach up and raise his visor to let the water out. His choice was to give up breathing or let go, and hope he'd get another chance. He held his breath and made it (barely).

To avoid this problem in the future, or at least reduce the hazard, why doesn't the Navy evaluate the Coast Guard rescue basket. We use it regularly and successfully with all types of people. It's simple, rugged, requires no special training or strength, and provides good protection to the passenger. Once inside, the passenger's hands are free (to raise visors or whatever). Injured people can be hoisted because no strength or effort is required other than swimming over the submerged basket side and sitting down. The swimming part is easy because the basket is designed to float with the lip right below the surface.

There are two other benefits besides survivor safety: 1) The basket is heavy metal, so it doesn't blow around in a hover; 2) The basket isn't as tall as a man, so it's easier to get in the cabin door.

Why don't you check it out?

LT Peter C. Olsen, USCG
NPGS

● The rescue basket was evaluated by the East Coast SAR School, and it is considered that its use with U.S. Navy helicopters is precluded for several reasons. It is rigid and not collapsible and therefore because stowage space in most Navy helicopters is at a premium, could not be carried internally. The Navy already has a collapsible rescue net, i.e., Billy Pugh, which provides an emergency means of rescue only and is rarely used. The prime means of rescue of a downed aviator is the SAR swimmer to assist injured or entangled survivors, which would not always be evident to a rescue helicopter crewman hovering above or close to the aviator in the water.

Picture This

NAF Washington, DC – The pictures accompanying your FEB '78 article "Airfield Profile No. 4: Andrews AFB/Naval Air Facility" would be more representative of the actual terrain/airport configuration here at Andrews if viewed with the aid of a mirror. The top picture would then depict the Approach to Runway 19L with the Navy mat to the *left* (beyond the Air Force Reserve ramp), and the bottom view would show Runway 1L in its proper perspective. Circling approaches would be recommended for anyone using your "approach plates."

For any readers contemplating a visit to Andrews, there is an additional item of useful information which was not included in your article. Base traffic regulations are strictly enforced. Visitors should be particularly observant of the posted speed limits and the restricted speed zones such as those adjacent to housing areas. Like advice applies to the Maryland highways. The section of interstate shown in one of the photographs is 1495. An enlargement of the print would probably disclose a speedtrap in operation. If not, there would be one not far down the road. The Maryland Highway Patrol has been known to use seemingly innocuous vehicles such as hay trucks and radar-equipped 18-wheelers to foil violators of the 55-mph rule. Also, a visitor will find that upon returning to the base after 2200, he will be required to present an ID card for examination at the gate – whether or not there is a decal on the bumper. Of course, the ID card examination routine provides the APs an opportunity to examine the condition of the driver as well. A word to the wise would be: Wend but do not weave your way back to the BOQ.

CDR Stan Arthur
Naval Air Reserve Unit

● You're absolutely right. Both negatives were flipped, leading to the mislabeling. Thanks for the correction and the additional information.

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approach

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A Naval Safety Center Publication

Our product is safety, our process is education, and our profit is measured in the preservation of lives and equipment and increased mission readiness.

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NO STEP LAND

WHAT STRANGE EMOTIONS
CRUSOE MUST'VE HAD
WHEN HE FIRST GAZED—
IN ISLAND SAND—
THE AWESOME PRINT
OF PRIMEVAL MAN

I KNOW THE THINGS HE FELT—
THE STRANGE EMOTIONS AS HE KNELT—
WHEN I UPON MY PLANE DID STAND
AND SEE AN OILY PRINT
IN 'NO STEP' LAND

B49-TR-378

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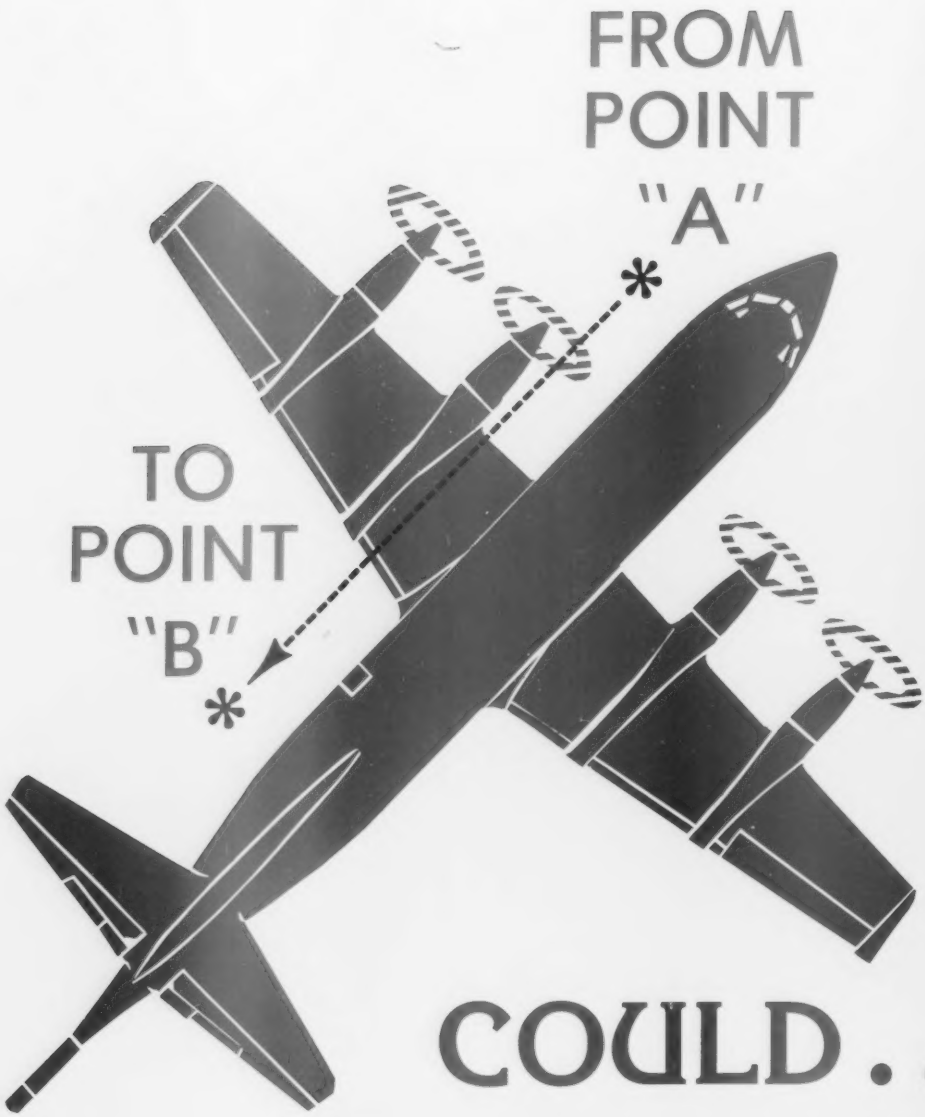
TO WALK . . .



COULD . . .

TAKE THE REST OF YOUR LIFE!

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Idea contributed by LCDR R. L. Fillinghim, VP-6 Safety Officer.